

KLOOSIA KRUSEMAN FROM THE SINO-INDIAN REGION (DIPTERA, CHIRONOMIDAE)

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Abstract The Sino-Indian species of the genus *Kloosia* Kruseman are reviewed and one new species from China, *K. weii* Yan et Wang, sp. nov. is described and illustrated. The male of *K. koreana* Reiss is illustrated based on the Chinese specimens. A key to known males of *Kloosia* from the world is provided.

Key words Chironomidae, *Kloosia*, new species, key, Sino-Indian Region.

1 Introduction

The genus *Kloosia* was erected by Kruseman (1933). The type species is *Tipula pusilla* Linnaeus, 1767. *Oschia* Sæther, 1983 was regarded as a synonym of *Kloosia* Kruseman by Reiss (1988). In the same paper, Reiss (1988) recorded *K. pusilla* and described two new species, *K. koreana* Reiss and *K. africana* Reiss, and treated *Cryptochironomus* lv. *vytshegdae* Zvereva, 1950 and *C. serpancus* Kirpichenko, 1961 as synonyms of *Kloosia pusilla* (Linnaeus).

The genus *Kloosia* is a member of the *Harnischia* complex. It is differentiated from all other member of the complex by the long inferior volsella, bearing only short setae. The immature stages of *Kloosia* are found in flowing rivers or streams sediments (Cranston *et al.*, Reiss, 1988).

To date, the genus contains 4 species worldwide, 3 in the Palearctic Region, *K. pusilla* (Linnaeus), *K. koreana* Reiss, *K. dorsenna* (Sæther); 1 shared with the Nearctic Region (*K. dorsenna* (Sæther)) and 1 in the Afrotropical Region, *K. africana* Reiss (Reiss, 1988; Kobayashi, 2007; Makarchenko *et al.*, 2005; Sæther, 1983; Sæther *et al.*, 2000). In Sino-Indian Region, Makarchenko *et al.* (2005) recorded *K. dorsenna* (Sæther) and *K. pusilla* (Linnaeus) from the Russian Far East. *K. koreana* Reiss is recorded from Korea by Reiss (1988) and from Japan by Kobayashi (2007). Wang (2000) listed *K. koreana* Reiss from China, but with no description.

In this paper, we review the species of the genus recorded from the Sino-Indian Region. The generic diagnosis of the males by Cranston *et al.* (1989) is emended. A new species, *K. weii* Yan et Wang, sp. nov., is recorded from the Hubei Province in China.

A key to known males of the world is given.

2 Material and Methods

The bound of Sino-Indian Region followed by Banarescu (1992), which includes whole Oriental Region and part of Southeast Palearctic Region (the Russian Far East, the Korean peninsula, Korea, Japan, etc.) in traditional zoogeographic delimitation.

The terminology follows Sæther (1980) with the additions and corrections given by Sæther (1990). The material examined was mounted on slides in Canada balsam following the procedure outlined by Sæther (1969). Type material and other studied material are housed in Life Science College, Nankai University, Tianjin, China (BDN).

3 Taxonomy

3.1 *Kloosia dorsenna* (Sæther)

Oschia dorsenna Sæther, 1983: 396.

Kloosia dorsenna (Sæther): Reiss, 1988: 42; Makarchenko *et al.*, 2005: 410.

Diagnostic characters. The species was described in detail by Sæther (1983: 396, Fig. 1). The species can be distinguished by the following combination of characters: AR 1.27 – 1.28; the swollen superior volsella with 2 apical setae and 1 lateral seta; the constricted inferior volsella in middle and the parallel-sided gonostylus.

Distribution. The species has a Holarctic distribution. Within the Sino-Indian Region, the species was recorded from the Russian Far East (Makarchenko *et al.*, 2005).

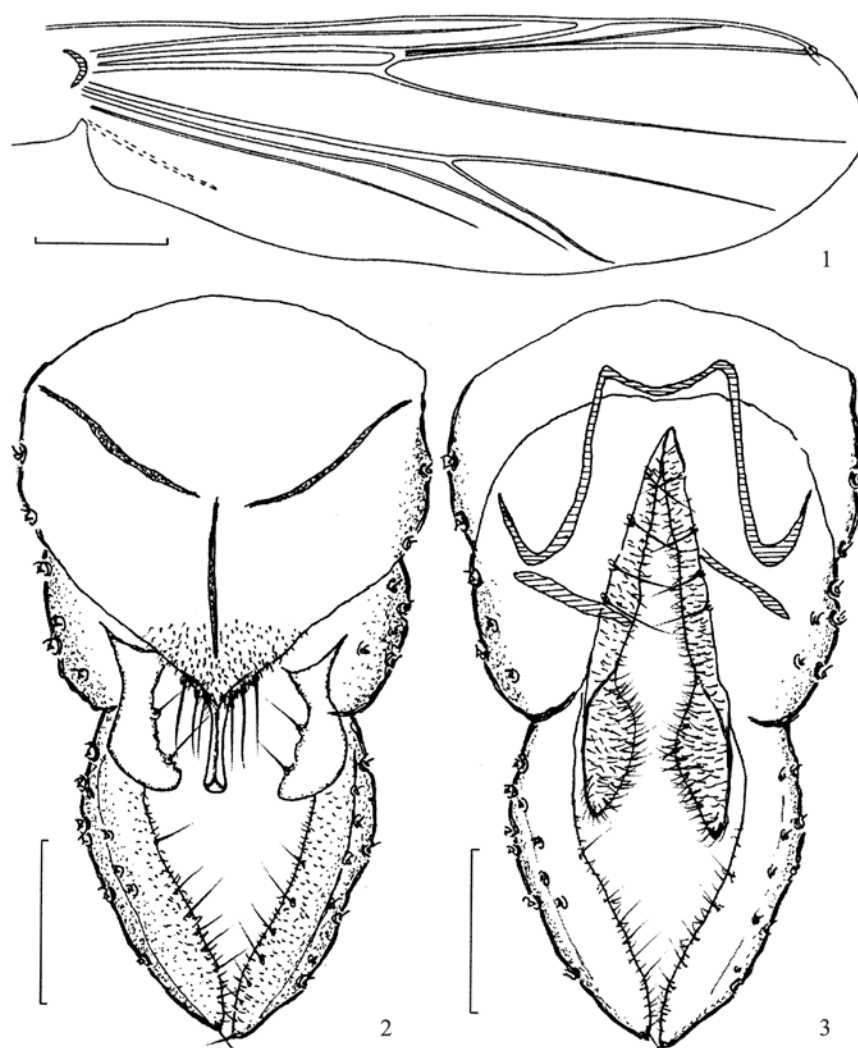
3.2 *Kloosia koreana* Reiss (Figs 1–3)

Kloosia koreana Reiss, 1988: 36; Sæther *et al.*, 2000: 187; Wang, 2000: 644; Kobayashi, 2007: 3.

Material examined. China, 2 ♂♂, Fujian

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Figs 1 – 3. *Kloosia koreana* Reiss, adult male. 1. Wing. 2. Hypopygium, dorsal view. 3. Hypopygium, ventral view. Scale bars: 1 = 0.2 mm, 2 – 3 = 50 μ m.

Province, Fuzhou Agriculture College (26° 05' N, 119° 16' E), 22 Apr. 1993, light trap, WANG Xin-Hua.

Diagnostic characters. The species is easily distinguished from other known species of the genus by having the superior volsella bent, with 2 lateral setae; inferior volsella knife-shaped, swollen medially.

Remarks. The males examined are consistent with the description of *K. koreana* given by Reiss (1988) and Kobayashi (2007). The larval description has been recorded by Epler (2001), Kobayashi (2007) and WBD (World Biodiversity Database). Based on Kobayashi (2007), the larva with 6 segmented antenna, blade arising subapically on 2nd segment. Mandible with pecten mandibularis and seta interna. Premandible with 3 apical teeth, without brush. Mentum with 6 pairs of lateral teeth.

Distribution. The species is recorded from Japan, Korea and Fujian Province in China.

3.3 *Kloosia pusilla* (Linnaeus)

Tipula pusilla Linnaeus, 1767: 975.

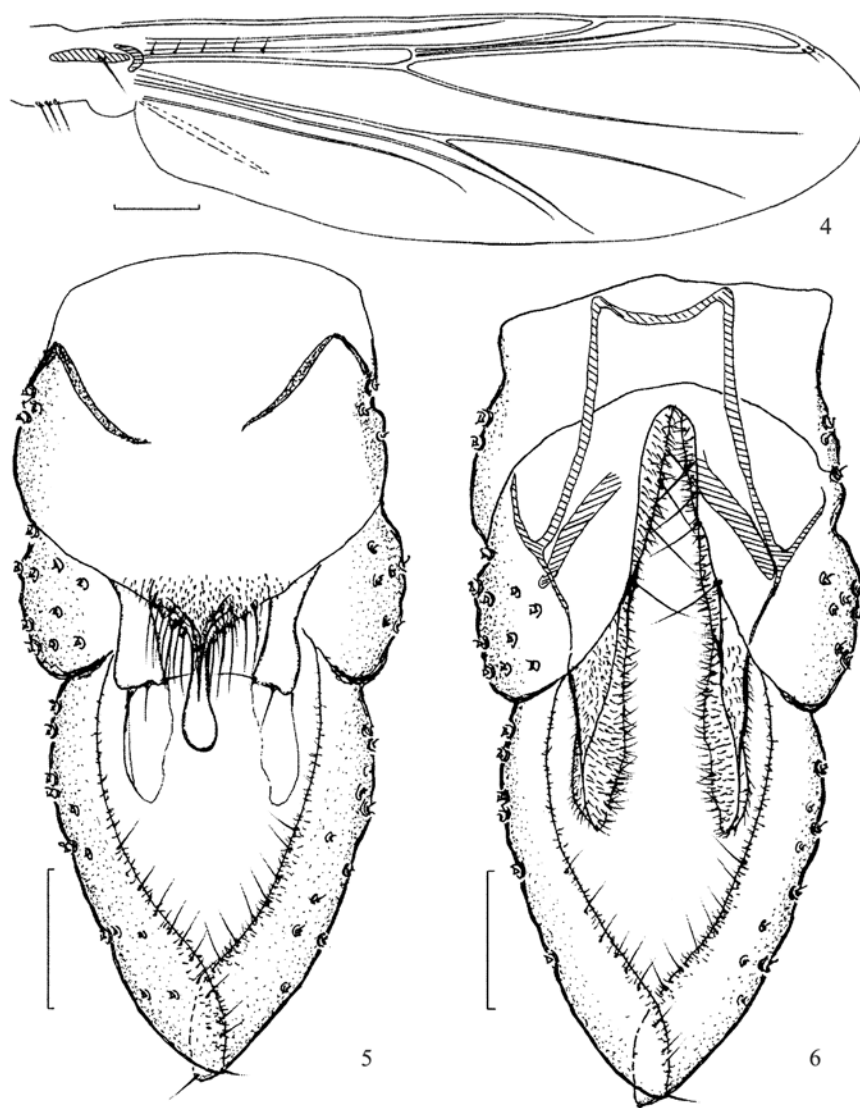
Kloosia pusilla (Linnaeus): Kruseman, 1933: 152; Albu, 1980: 173; Reiss, 1988: 40; Sæther *et al.*, 2000: 187; Makarchenko *et al.*, 2005: 410.

Diagnostic characters. The species differs from other *Kloosia* species by shoulder-shaped margin of anal tergite IX; the swollen superior volsella distally with 2 subapical setae; the long inferior volsella is 2 times as superior volsella.

Distribution. The species has a Palearctic distribution. In the Sino-Indian Region, the species was recorded from the Russian Far East (Makarchenko *et al.*, 2005).

3.4 *Kloosia weii* Yan *et* Wang, sp. nov. (Figs 4 – 6)

Diagnostic characters. The species is similar to *K. dorsenna* (Sæther) in having the apical truncated superior volsella with 2 apical setae. It can be distinguished by having dark brown vittae, with frontal tubercles, no setae on R_1 ; the V-shaped anal tergite bands; and the inferior volsella straight and the



Figs 4 – 6. *Kloosia weii* Yan *et* Wang, sp. nov., adult male. 4. Wing. 5. Hypopygium, dorsal view. 6. Hypopygium, ventral view. Scale bars; 4 = 0.2 mm, 5–6 = 50 μ m.

gonostylus distally swollen.

Male imago ($n = 2$). Total length 3.34 – 3.40 mm. Wing length 1.73 – 1.74 mm. Total length / wing length 1.91 – 1.93. Wing length / length of profemur 2.63 – 2.66.

Coloration. Thorax yellowish brown, with dark brown vittae, anterior 1/3 of preepisternum, median anepisternum, and anterior 2/3 of postnotum. Femura of front leg yellowish brown except distal 1/3 dark brown, tibia and tarsi dark brown; femura of mid and hind leg yellowish brown, tibia and tarsi dark brown. Abdomen yellowish brown and hypopygium dark brown.

Head. AR 1.71 – 1.72; ultimate flagellomere 575 – 580 μ m long. Frontal tubercles small, 3 μ m long. Temporal setae 10 – 11, including 3 inner verticals, 3 – 4 outer verticals, and 3 – 5 postorbitals. Clypeus with 8 – 10 setae. Tentorium 70 – 82 μ m long, 18 – 22 μ m wide. Palpomere lengths (in μ m): 27 – 30; 43 –

45; 83 – 102; 142 – 153. Palpomere 5/3 1.43 – 1.46.

Thorax. Anteprenotals 0; acrostichals 2; dorsocentrals 8 – 10; prealars 3 – 4. Scutellum with 7 – 9 setae.

Wing (Fig. 4). VR 1.20 – 1.23. R with 4 – 5 at base; R_1 bare; R_{4+5} with 2 setae apically. Brachiolum with 1 seta. Squama with 3 – 4 setae.

Legs. Fore tibia with 2 subapical setae, 87 – 98 μ m. Spurs of mid tibia 13 – 15 μ m and 15 – 16 μ m long; comb with 22 – 26 teeth, 8 – 9 μ m long. Spurs of hind tibia 15 – 17 μ m and 17 – 20 μ m long; comb with 34 – 38 teeth, 8 – 9 μ m long. Tarsus 1 of mid and hind leg without sensilla chaetica. Lengths (in μ m) and proportions of legs as in Table 1.

Hypopygium (Figs 5 – 6). Tergite IX with triangular margin and 16 – 18 setae on base of anal point. Laterosternite IX with 3 setae. Anal tergite bands V-shaped, separated medially. Anal point constricted basally, swollen distally, 45 – 50 μ m long.

Phallapodeme 60 – 68 μm long. Transverse sternapodeme 44 – 50 μm long. Superior volsella 38 – 42 μm long, swollen and truncated distally, with 2 apical setae. Inferior volsella almost straight, narrowed toward distal part, and covered by microtrichia, without long lateral and apical setae. Gonocoxite 107 – 110 μm long; with 4 – 5 strong setae along inner margin. Gonostylus 142 – 150 μm long, slender basally, swollen distally. HR 0.71 – 0.73; HV 2.23

Table 1. Lengths (in μm) and proportion of legs of *K. weii* Yan et Wang, sp. nov., male ($n = 2$).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR
P ₁	650 – 660	560 – 570	700 – 720	330	250 – 255	170 – 180	110 – 115	1.25 – 1.26
P ₂	610 – 620	560 – 580	280 – 300	180 – 190	130 – 140	80 – 85	80 – 90	0.50 – 0.52
P ₃	700 – 720	750 – 765	440 – 450	270 – 280	220 – 230	130 – 140	100 – 110	0.59

4 Remarks

Male diagnosis. Based on the variation in Chinese material (*K. weii* Yan et Wang, sp. nov.), the generic diagnosis given by Cranston *et al.* (1989) should be emended as follows: “Antennal ratio 1.0 – 1.3” should be changed to “Antennal ratio 1.0 – 1.7”; the character “wing length 1.1 – 1.4 mm” should be emended to “wing length 1.1 – 1.7 mm”; the character “frontal tubercles absent” should be emended to “with small frontal tubercles or absent”; “anal tergite bands Y-shaped” should be emended to “anal tergites bands Y-shaped, occasionally V-shaped, and separated medially”.

Key to males of genus *Kloosia* Kruseman.

- Superior volsella with lateral setae; gonostylus constricted medially *K. koreana* Reiss, 1988
Superior volsella with apical setae; gonostylus parallel-sided or swollen apically 2
- Anal point parallel-sided; superior volsella bent strongly *K. africana* Reiss, 1988
Anal point swollen distally; superior volsella bent slightly or not bent 3
- Inferior volsella slender toward apical part; gonostylus widen toward distal part *K. weii* Yan et Wang, sp. nov.
Inferior volsella swollen toward apical part; gonostylus parallel-sided 4
- Squama bare; margin of tergite IX shoulder-shaped *K. pusilla* (Linnaeus, 1767)
Squama with setae; margin of tergite IX triangular *K. dorsenna* (Sæther)

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– 2. 25.

Holotype ♂ (BDN No. 24542), China, Hubei Province, Hankou City (30°30'N, 114°15'E), 15 Apr. 2000, light trap, WEI Si-Ying. Paratype 1 ♂, same data as holotype.

Etymology. Named in honor of S. Wei, who collected the material.

Distribution. The species was collected in Hubei Province in China.

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中印区克鲁斯摇蚊属记述 (双翅目, 摇蚊科)

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摘 要 记述中印区克鲁斯摇蚊属雄成虫 4 种, 对新种韦氏克鲁斯摇蚊 *Kloosia weii* Yan *et* Wang, sp. nov. 进行了描述和绘图。并重新检查和绘图了旧纪录种 *Kloosia koreana* Reiss。提供了世界克鲁斯摇蚊属雄成虫分种检索表。模式标本存放于南开大学生命科学学院摇蚊学研究室。

韦氏克鲁斯摇蚊, 新种 *Kloosia weii* Yan *et* Wang, sp. nov.

(图 4~6)

关键词 摇蚊科, 克鲁斯摇蚊属, 新种, 检索表, 中印区.

中图分类号 Q969.442.6

新种上附器近似于 *K. dorsenna* (Sæther), 但特征区别如下: 头部具额瘤, 胸部具深棕色色斑, R_1 脉无小刚毛, 第 9 背板带 V 型; 下附器直, 抱器端节端部膨大。

正模 ♂, 湖北省汉口市, 2000-04-15, 韦思颖, 灯诱。

副模 1 ♂, 其它同正模。

词源: 新种种名以采集人姓氏而命名。